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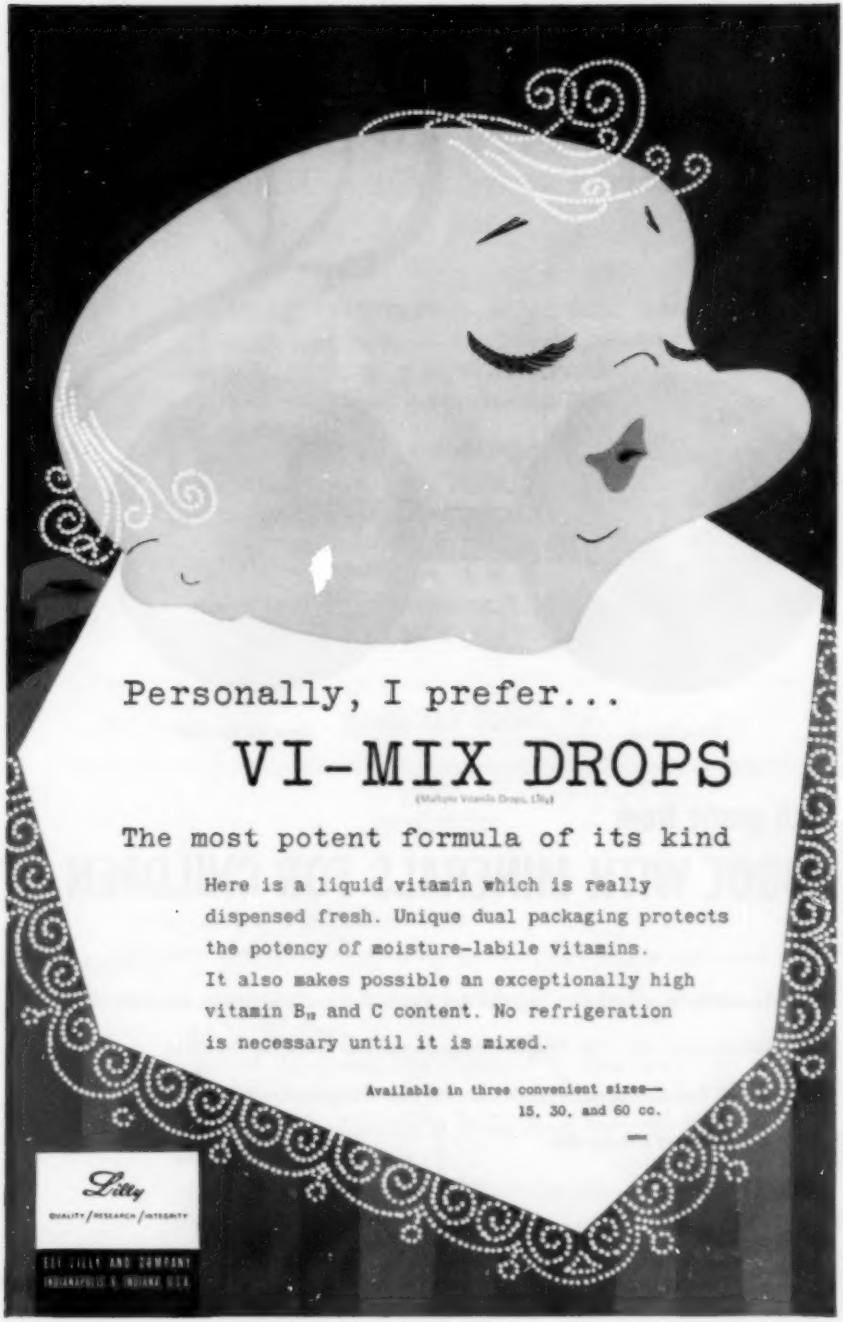
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EDITORIAL

REFLECTIONS OF A SEMICENTENARIAN

AS one approaches that time in life of having lived fifty years, it is difficult not to give some reflection on the changes which are wrought by time and those which are even yet to come. This is an experience which comes to most people but it is not altogether painful and unpleasant. That change does take place during each successive decade of life is inevitable and only the most stubborn individuals insist that they are just as physically fit and capable in spite of the passage of time. The changes which age bring about, however, are fairly well balanced between good and bad for each age of man has its true rewards just as it has its liabilities. Far too little attention is given this both by the individual as well as society as a whole.

In the field of gerontology, some progress is being made studying the aging process in all of its aspects. While much is already known concerning the physiology and anatomical changes which aging produces, little is understood concerning the even more important psychic changes and the importance of environmental influences.

The nutritional needs of man during his later years have received great attention and almost every well-informed oldster knows a number of things which he should do if he is to maintain optimum health. With decreased physical activity, his early and thoroughly ingrained eating habits must be drastically altered if excessive calories are to be avoided. The percentage of fat in the diet must be reduced and much of it replaced by high quality protein. The older person, like the child, usually has an increased vitamin requirement, but not for the same reason. While the child's needs are based on a rapidly growing body, those of the older person are based on a restricted diet and less efficient absorption and utilization. In the older person, the endocrine system begins showing some signs of fatigue and, while the thyroid, if it slows down, may not produce as dramatic a change as that induced by gonadal failure, the results are even more significant from the standpoint of over-all well-being.

All of these things, of course, are very well-known and are among the important considerations in geriatric practice. The psychic

changes, however, which occur have not been given the attention they deserve and, even worse, the attitude of modern society with respect to its older citizens is highly traumatic, to say the least.

As a person grows older, change and particularly abrupt change becomes a thing to be abhorred. The *status quo* becomes a thing to be avidly maintained and, even by the time a man reaches fifty, he usually is highly suspicious of the radical innovations suggested by his much younger colleagues. This is a tendency which must be resisted by the older person since only change can bring progress, unpleasant though it may first appear. One of the reasons why change is not looked upon with the same fervor is because man begins to appreciate, as he develops a more mature philosophy, that some things such as human nature change but little in spite of the many efforts of many well-intentioned people over the years to do something about it. Indeed, those things which can be changed most readily such as the design of our homes, automobiles, and miscellaneous gadgets do not need most of the changes that are made in them as contrasted with the many things which, if they could be changed, would be a great boon to society. Most young men start out in life fully confident that they will make large and significant contributions to the world's progress. Few, indeed, manage to do this and, consequently, there must come to most of us in time the realization that the world will not be greatly changed by our lives just as it was not greatly changed in its really important features by the untold generations which preceded us.

There does come, however, to one who lives long enough a certain understanding which can only be the product of age. One learns people better and sees his own place in society much more clearly defined. He appreciates the many human weaknesses and frailties just as he does the full measure of human dignity. The pleasures of the mind and soul take precedence over the more physical and these can prove even more completely satisfying and more genuine. All in all, advancing years can be a time of great personal satisfaction.

The greatest hazard confronting the aging person stems from the attitude of modern society. Time was when age was highly respected and revered and the position of the older man or woman in the social structure was highly exalted. It was the elder statesman who controlled the destiny of families and nations and it was from such that advice and counsel were sought and generally followed. Today, the emphasis has shifted so much to youth that many of our best minds are being wasted and neglected. No longer is age held in very much

respect and men are forced to retire from industry at an age when their judgment and certain highly specialized skills are far superior to many of their younger associates. While society may be able to afford this colossal waste, the damage which it does to the older worker is shameful. What should be his golden years in the autumn of his life becomes a period of disillusionment and only too often he feels that he is rejected and of no further service. The psychic trauma which this causes is quite profound and the ramifications of this evil are of staggering proportions.

While it is understandable that all of us as we age must be expected to champion the cause of older people, this is rapidly becoming a social and even a medical problem of great magnitude. If, indeed, we are to have the glorious future which is predicted for us as a nation, changes must of necessity be made in our attitude toward our older citizens. They will continue to grow in numbers and in importance and they must be both appreciated and utilized fully if we are to enjoy a truly golden era in the history of mankind.

L. F. Tice

STUDIES OF THE GENUS THYMUS

Part II

The Palisade Numbers of Leaves Serially Located on Branches of Thymus Serpyllum Particularly Its Varieties Albus and Coccineus

By Ikram Hassan * and Marin S. Dunn **

THE palisade number method has thoroughly been explained by Silverman and Dunn (1), and while studying the usefulness of this method for quantitative determinations of certain other drugs, the authors of this paper wondered what would be the effect on the palisade number count of the position of a leaf on the branch.

The present studies were therefore carried out by determining palisade numbers of leaves starting from the tip and passing serially to the base of branches of Thymus Serpyllum particularly its varieties albus and coccineus.

All the material used in this investigation was obtained from the Cloud Hill Nursery of Quakertown, Pennsylvania. It was labelled in the following way:

A. Thymus Serpyllum (3 plants)
B. Thymus Serpyllum var. albus (3 plants)
C. Thymus Serpyllum var. coccineus (3 plants)

The material used in these studies was checked for authenticity by comparing it carefully with appropriate herbarium sheets, of the Martindale Collection of the Philadelphia College of Pharmacy and Science, of the New York Botanical Garden (in case of Thymus Serpyllum var. albus only), and of the Philadelphia Academy of Natural Sciences. The characteristics of the plants under study were found to compare favorably with the description of Thymus Serpyllum Linn. and its varieties albus and coccineus as given by Bailey (2, 3), Hegi (4), Whittmack (5), Grieve (6), Youngken (7), and Rhode (8).

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Entire branches from potted greenhouse plants were selected which exhibited generally healthy leaves throughout their length. In our study, one branch from each of the above-mentioned nine plants was used. The same method given below was employed for each of the nine branches selected.

The branch was stripped of its side branches and cut into pieces from apex to base in such a way that only one node was included in one piece. Each piece was placed in a microtest tube. In the case of the first, second and third pairs of leaves, since they were so tiny, it was more convenient to remove them carefully and place them in numbered microtest tubes.

Each test tube as soon as it had received its material was then filled ⅓ full with chloral hydrate solution (50 gm. in 20 mls. of water), and loosely corked. These test tubes were now allowed to stand in hot water just below boiling. This treatment allowed cellular structures of the material to be observed clearly within 2-3 hours.

Each test tube when its turn arrived was emptied into a watch crystal and the two leaves were detached from their node. They were then mounted in fresh clear chloral hydrate solution (strength given above), upper surface up, on a slide and covered by a cover glass.

The leaves were examined each in turn with 10X ocular and 10X objective to determine if the palisade cells could be clearly seen. If so, under the high power (43X) objective, the number of palisade cells was counted from one of the centrally-located rectangles of the Howard micrometer Disc as illustrated by Silverman and Dunn (1). This disc had previously been placed inside the ocular chamber of the microscope used for making the determinations.

Four observations were made from four adjacent areas chosen at random in the center of each leaf—two counts being made on each side of the mid-rib. After the determinations, the length and breadth of one of the leaves of the pair was measured with a millimeter scale, the petiole being included in the length. The "area" of the leaf, as used in this study, was then calculated by multiplying length and breadth. In case of difference in size of the two leaves of any given pair, the larger leaf was measured.

In making the determinations, a part of each area was selected which was characterized by lack of stomata and absence of air spaces. The palisade cells were counted just when they first appeared in focus from above (i.e. the upper end).

Data obtained is given in tables I, II and III.

TABLE I

Cloud Hill Nursery. Plants Labelled - Thymus Serpyllum

Serial No. of Leaf Pair	BRANCH I "Area" of the larger leaf of the pair	BRANCH I Average Palisade No. of leaf I *	BRANCH I Average Palisade No. of leaf II **	BRANCH I Average Palisade No. of Serial pair	BRANCH II "Area" of the larger leaf of the pair	BRANCH II Average Palisade No. of leaf I *	BRANCH II Average Palisade No. of leaf II **	BRANCH II Average Palisade No. of Serial Pair	BRANCH III "Area" of the larger leaf of the pair	BRANCH III Average Palisade No. of leaf I *	BRANCH III Average Palisade No. of leaf II **	BRANCH III Average Palisade No. of Serial leaf
1	5 sq.mm.	59	55	57.0	6 sq.mm.	36.5	36.0	36.25	2.0 sq.mm	49.5	51.25	51.25
2	7 " "	22	23	22.5	7 " "	24.5	22.5	23.5	9.0 " "	26.25	27.75	27.0
3	15.0" "	16	17	16.5	15.0 " "	15.25	16.75	16.0	28.0 " "	19.5	19.75	19.62
4	16.5" "	15	16	15.5	16.5 " "	14.25	15.75	15.0	34.0 " "	16.5	14.0	15.25
5	28.0" "	14	13.5	13.75	18.0 " "	16.0	15.0	15.5	40.5 " "	10.5	10.75	10.62
6	32.0" "	13.75	12.5	13.12	19.5 " "	15.25	15.75	15.5	38.25 " "	11.75	10.75	11.25
7	34.0" "	12.0	11.75	11.87	28.0 " "	15.75	12.75	14.25	34.0 " "	12.5	11.75	12.12
8	38.25"	12.0	12.0	12.0	32.0 " "	12.5	13.25	12.87	38.25 " "	12.25	10.25	11.25
9	40.5 " "	11.0	11.25	11.12	33.75" "	13.25	13.0	13.12	40.5 " "	11.75	11.0	11.37
10	38.0 " "	10.25	9.75	10.0	36.0 " "	11.25	11.75	11.5	47.5 " "	10.25	10.75	10.50
11	42.75" "	11.75	10.5	11.12	36.0 " "	10.75	11.25	11.0	47.5 " "	9.75	12.0	10.87
12	45.0 " "	10.5	10.75	10.62	36.0 " "	9.75	11.0	10.37	55.0 " "	12.75	11.0	11.87
13	50.0 " "	10.25	10.75	10.5	47.5 " "	10.25	10.25	10.25	52.5 " "	11.25	10.25	10.75
14	55.0 " "	10.75	10.25	10.5	50.0 " "	10.0	9.75	9.87	40.5 " "	11.25	13.0	12.12
15	60.5 " "	11.0	10.0	10.5	50.0 " "	10.25	10.25	10.25	42.75 " "	11.50	10.75	11.12
16	66.0 " "	10.0	9.75	9.87	55.0 " "	9.25	9.0	9.12	40.5 " "	13.25	12.50	12.87
17					63.0 " "	8.5	9.25	8.87	50.0 " "	12.25	11.0	11.62
18					66.0 " "	10.0	9.0	9.5	63.0 " "	10.0	10.25	10.12
19					66.0 " "	7.75	8.0	7.87	60.5 " "	10.25	9.75	10.0
20									60.5 " "	9.25	9.0	9.12
21									66.0 " "	8.75	8.25	8.5

* based on 4 observations of leaf #1 of indicated pair
** based on 4 observations of leaf #2 of indicated pair

TABLE II

Cloud Hill Nursery. Plants Labelled Thymus Serpyllum var albus

	BRANCH I				BRANCH II				BRANCH III			
Serial Number of leaf pair	"Area" of larger leaf of the pair	Average Palisade Number of leaf I *	Average Palisade Number of leaf II *	Average Palisade Number of serial pair	"Area" of larger leaf of the pair	Average Palisade Number of leaf I *	Average Palisade Number of leaf II *	Average Palisade Number of serial pair	"Area" of larger leaf of the pair	Average Palisade Number of leaf I *	Average Palisade Number of leaf II **	Average Palisade Number of serial pair
1	6.0 sq.mm								4.50 sq.mm	19.0	16.5	17.75
2	8.0 " "	10.0	10.5	10.25	6.0 sq.mm	11.25	13.75	12.5	8.0 " "	10.0	11.0	10.50
3	9.0 " "	7.25	6.75	7.0	13.75 " "	7.75	8.0	7.87	9.0 " "	9.25	9.75	9.50
4	9.0 " "	7.75	6.50	7.12	13.75 " "	8.25	7.5	7.87	9.0 " "	9.0	9.50	9.25
5	10.0 " "	7.25	6.50	6.87	13.75 " "	7.75	8.50	8.12	9.0 " "	8.50	9.50	9.0
6	12.5 " "	6.75	6.25	6.50	13.75 " "	7.75	7.75	7.75	8.0 " "	10.0	10.5	10.25
7	13.75 " "	6.25	6.25	6.25	13.75 " "	8.0	8.75	8.37	11.8 " "	8.25	7.5	7.62
8	15.0 " "	5.75	withered	5.75	13.75 " "	7.25	8.25	7.75	12.3 " "	7.25	7.0	7.12
9	21.0 " "	5.50	5.75	5.62	13.75 " "	8.25	8.50	8.37	12.9 " "	5.75	6.50	6.12
10	21.0 " "	5.0	4.50	4.75	13.75 " "	7.25	8.0	7.62	9.0 " "	8.50	9.25	8.87
11	21.0 " "	5.0	4.75	4.87	13.75 " "	7.75	7.5	7.62	8.0 " "	9.5	11.50	10.50
12	21.0 " "	5.0	5.25	5.12	10.0 " "	9.25	9.75	9.5	9.0 " "	10.0	10.25	10.12
13	16.25 " "	6.75	withered	6.75	10.0 " "	8.50	8.75	8.62	8.0 " "	11.0	11.0	11.0
14	17.5 " "	5.75	6.25	6.0	9.0 " "	9.0	9.25	9.12				
15	19.5 " "	6.25	withered	6.25								
16	16.25 " "	6.25	7.0	6.62								
17	17.5 " "	6.50	7.25	6.87								
18	17.5 " "	6.5	7.75	7.12								
19	16.25 " "	7.0	7.5	7.25								

* based on 4 observations of leaf #1 of indicated pair
** based on 4 observations of leaf #2 of indicated pair

TABLE III

Cloud Hill Nursery. Plants Labelled - Thymus Serpyllum var. coccineus

	BRANCH I				BRANCH II				BRANCH III			
Serial Number of leaf pair	"Area" of the larger leaf of the pair	Average Palisade Number of leaf I *	Average Palisade Number of leaf II *	Average Palisade Number of serial pair	"Area" of the larger leaf of the pair	Average Palisade Number of leaf I *	Average Palisade Number of leaf II **	Average Palisade Number of serial pair	"Area" of the larger leaf of the pair	Average Palisade Number of leaf I *	Average Palisade Number of leaf II **	Average Palisade Number of serial pair
1	1.5 sq.mm.	31.0	36.0	33.5	3.12 sq.mm	29.0	30.0	29.50	0.5 sq.mm			—
2	6.25 " "	27.25	26.0	26.62	7.0 " "	12.25	12.50	12.37	4.5 " "	10.5	10.25	10.37
3	8.0 " "	9.50	10.75	10.12	9.0 " "	11.0	9.50	10.25	10.0 " "	9.25	9.50	9.37
4	8.5 " "	10.0	9.0	9.50	8.5 " "	9.5	8.25	8.87	12.5 " "	8.25	7.0	7.62
5	8.5 " "	10.5	10.5	10.5	10.0 " "	9.5	10.0	9.75	10.0 " "	10.0	7.5	8.75
6	9.0 " "	9.25	9.25	9.25	10.5 " "	8.25	8.25	8.25	11.0 " "	6.5	7.0	6.75
7	11.25 " "	8.25	7.75	8.0	10.5 " "	7.0	6.75	6.87	12.3 " "	6.25	7.5	6.87
8	12.5 " "	8.5	8.0	8.25	13.75 " "	8.5	7.5	8.0	13.0 " "	6.75	6.25	6.5
9	15.0 " "	6.75	8.0	7.37	13.75 " "	6.5	7.25	6.87	13.1 " "	6.75	7.0	6.87
10	13.75 " "	6.0	6.75	6.37	13.75 " "	7.5	7.0	7.25	11.25 " "	9.0	8.25	8.62
11	12.5 " "	8.0	7.25	7.62	12.5 " "	7.75	7.75	7.75	11.8 " "	7.0	7.75	7.37
12	15.75 " "	6.25	6.75	6.5	13.75 " "	8.0	7.5	7.75	13.1 " "	6.75	8.0	7.37
13	18.0 " "	5.25	5.0	5.12	14.4 " "	6.5	7.5	7.0	13.75 " "	6.25	6.50	6.37
14	18.0 " "	5.25	5.5	5.37	10.5 " "	7.25	6.75	7.0	12.3 " "	7.75	8.25	8.0
15	18.0 " "	5.25	5.0	5.12	10.0 " "	8.25	10.75	9.5	12.5 " "	8.25	8.0	8.12
16	18.0 " "	4.75	5.75	5.25	11.0 " "	7.75	8.0	7.87	11.25 " "	9.75	9.0	9.37
17					10.0 " "	8.5	7.75	8.12	7.0 " "	10.0	9.25	9.62

* based on 4 observations of leaf #1 of indicated pair
** based on 4 observations of leaf #2 of indicated pair

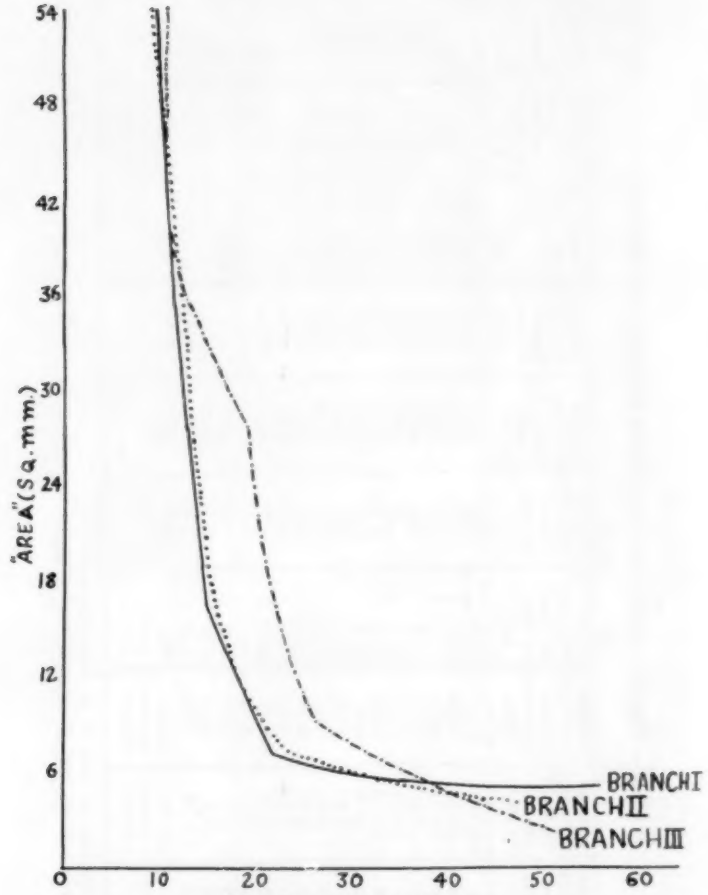

FIG I-PALISADE NUMBER OF VARIOUS LEAF AREAS OF THYMUS SERPYLLUM

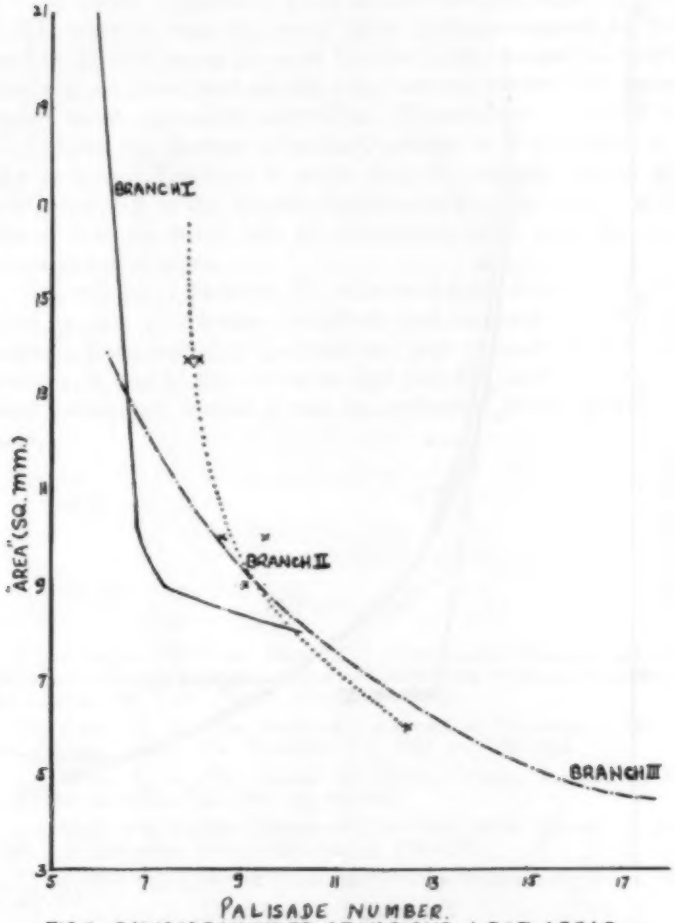

FIG. 2 - PALISADE NUMBER OF VARIOUS LEAF AREAS OF THYMUS SERPYLLUM VAR. ALBUS.

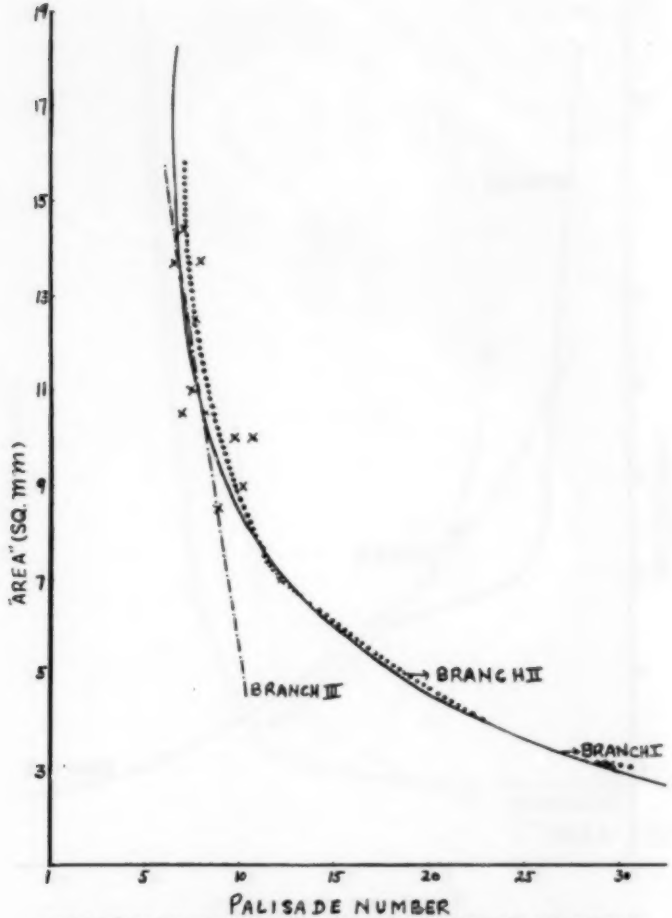

FIG. 3—PALISADE NUMBER OF VARIOUS LEAF AREAS OF THYMUS SERPYLLUM VAR. COCCINEUS.

Summary

The curves (Figures 1, 2 and 3) and tabulated data (Tables I, II, III) seem to show that much higher palisade numbers are to be found in the very young leaves of Thymus Serpyllum and its varieties albus and coccineus, and as leaf area becomes greater, the palisade number count appreciably diminishes. Examination of figures 1, 2 and 3 shows this decrease of palisade number in larger leaves to be quite striking. Therefore it seems that the palisade number as a quantitative tool in the Thymus varieties used in our studies is only valuable from the 4th or 5th pair of leaves or older, when the curves become almost straight.

The validity of the use of the criterion of palisade number is questioned in case of Thymus Serpyllum and its varieties albus and coccineus, when applied to the first 3 or 4 pairs of leaves of the branch. However, it may be that the quite high palisade number of the very young leaves may furnish a tool for separation of young from old leaves.

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CRAWFORD W. LONG AND HIS RELATIONS TO PHARMACY *

By Kenneth L. Waters **

WHY did Crawford W. Long discover ether for anesthesia? Was he a brilliant young researcher constantly delving into the unknown? How could such an important medical advancement be made in an obscure frontier village in a territory which had been occupied by the Cherokee Indians until only recently? Although Jefferson, Georgia was 120 miles from the nearest railroad there was, in spite of the notoriously poor roads and slow communications, no lack of a humanitarian motive or of scientific spirit. It was not, however, the environment which was responsible for Long's noting this important property of ether, but his keen mind and close observation of the drugs and chemicals with which he was so familiar. What was the background of this twenty-six year old youngster who only seven years previous to the world's greatest contribution to mankind had completed his undergraduate work at the University of Georgia? Boland (1), (2), (3), (4), Taylor (5), Jacobs (6), Young (7), Redman (8) and others have presented documentary material about Dr. Long, however, let us mix facts with fantasy and draw upon our imagination for factors which may well have contributed and led Dr. Long to his important observations which resulted in the discovery of the Ether for Anesthesia.

When Crawford W. Long came to Athens to attend the University of Georgia in 1830 at the age of fourteen, he had not made up his mind to study medicine. Indeed, he had little opportunity to even observe medical practice in his home town of Danielsville, some fifteen miles northeast of Athens. The University town of Athens with its medical practitioners and apothecary shops offered a new challenge. He enrolled in the University and took the prescribed course consisting mostly of the classics. During his five year stay on the campus he became well acquainted with one of the strongest scientific faculties of that time in the nation. Prominent among

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these were the LeConte Brothers who were later to become the founders of the University of California.

Long's roommate, Alexander Stephens, destined to become vice president of the Confederacy, marvelled at his companion's scientific interest and lamented his lack of real interest in politics. Long often preferred the company of local druggists to that of his university colleagues. Drug store activity, especially the preparation and compounding of the drugs, constantly whetted his appetite for the scientific. The drug drummers (medical service representatives) were not too frequent comers to Athens. It was necessary for the local pharmacist to go to the woods and obtain his own crude drugs, and often it was essential that he manufacture his own chemicals. Long could not be considered as working his way through school, but he spent many hours helping in the preparation of the extracts, spirits and elixirs in drug stores in Athens.

This association with pharmacists and local physicians caused Crawford Long to determine to study medicine, but having received his Master of the Arts degree when only twenty years old, he was considered too young by local Athens physicians to start reading medicine. So he returned to his home in Danielsville, where he served as principal of the Academy for a year. This was not to the liking of the young man who had a burning desire to serve humanity. It was a real opportunity when Dr. Grant of Jefferson, Georgia, permitted him to start reading in his practitioner's office. Fortune was kind to James Long, and he could afford to send his son to what was, then considered, one of the best schools of medicine in the nation —Transylvania University in Lexington, Kentucky. However, at Transylvania, Long apparently became dissatisfied, and it is thought that he missed the opportunity to work and experiment with drugs as was his habit in Athens.

Modern drug history was being made in Philadelphia. Out of this city had come the new second edition of the United States Pharmacopoeia. Long wanted to study medicine, but also wanted to know more about the medicines he dispensed. So the next year the young Georgian decided to complete his work at the University of Pennsylvania. Here he came under tutorship of that great original thinker, keen observer, and profound scholar—George B. Wood, who taught materia medica. Wood, not only edited the United States Dispensatory, but was prominent in the revision of the United States Phar-

macopoeia. Dr. Wood insisted that an observer should not be content with one experiment and abhorred the idea of premature reporting of the reactions of drugs. As Dr. Frank Boland has pointed out, Wood's influence on Crawford Long may well have been responsible for his failure to report his experiment in the use of ether for anesthesia.

A group of Georgia boys studying medicine at the University of Pennsylvania boarded at the corner of Market and Nineteenth Street. It is thought that Long was among this group who experimented with sulfuric ether to experience its exhilarating and soporific effects rather than for any scientific reasons. Nitrous Oxide parties had long been the vogue, but ether was now more convenient. Who is to say that Long did not visualize the use of sulfuric ether as a valuable assistant to entertainment on certain occasions? Long's drug experience may well have led him to believe the product had market value, and perhaps less expensive and at least more novel than alcoholic beverages.

Long completed his medical education at the University of Pennsylvania in 1839, and went to New York where he spent eighteen months "walking the hospitals". He proved himself an able surgical assistant to some of the leading physicians of the day, learning from such recognized surgeons and teachers of the time as Valentine Mott, Kearney Rogers, and Willard Parker. However, Crawford Long gave up a big city career to return to his native Georgia—Why did he make this decision? Was it because he witnessed great suffering without being able to do anything about it? Did he have the vision that he perhaps could do something about it? Had he already conceived the idea that ether could be used for killing pain, but was afraid his elders would not permit him to experiment? We do know that in a few short months after he left New York and came to Jefferson, Georgia, the discovery was made.

In the quiet pioneer town he reflected on the ether parties of Philadelphia and the suffering of the New York Hospitals. The twenty-five year old physician sent to Athens for some ether and, no doubt, had hilarious times with students at the local academy, perhaps encountering some disfavor with the local townspeople and nearby plantation owners. It was during these escapades that the insensitivity to pain, while under the influence of ether, was definitely observed. This fact, coupled with the apparently harmless nature of ether, led to

the decision to remove the wen from the neck of James Venable. The story of the first use of ether for anesthesia on March 30, 1842, is so well known that it shall not be repeated here.

Dr. Long's entire career demonstrates his pharmaceutical interest. He practiced in Jefferson until 1850 when he moved to the growing town of Atlanta. However, the city practice was not to the liking of the country doctor who was accustomed to preparing and dispensing his own drugs. Within the next year he moved to Athens. Here, with his younger brother, he established a practice built around his own drug store. There are those who claim that the drug business was Dr. Long's first love. In those days the State of Georgia permitted any licensed physician to also practice pharmacy. The Long drug store was located at what is now known as 247 East Broad Street.

It is interesting to know just what the drug store was like a hundred years ago. So often we hear members of the medical profession and the laity say that the modern drug store sells everything but drugs and cry for the good old days. Contrary to popular opinion, drug stores have not changed as much as one would think. Drs. Long and Long operated what we would consider an ordinary drug store. One of the first advertisements of the Long and Long Drug Store appeared on November 13, 1851, in the Southern Banner and is reproduced for your interest. When one examines this advertisement carefully, its modern counterpart may be seen in most any daily newspaper. First preference is given to toilet articles and cosmetics, paints, oils, and glass are also given a prominent place. Please note below the advertisement which appeared in the Southern Banner, Athens, Georgia on November 13, 1851.

DRS. C. W. and H. R. J. LONG

Have just received from X. BRAZIN, a choice selection of Toilet and Shaving Soaps, Cosmetics, Pomades, Extracts for the Handkerchief, and a variety of Fancy Articles,

— among which are —

Jenny Lind, Poucine, Mymph, Amandine and Honey Toilet Soaps; Philoceme, Eau Lustral, Jenny Lind, Pomade and Hair Gloss, Beef Marrow, Bear's Oil, Rose Oil, and Depilatory Powder for the Hair.

Perfumes for the Handkerchief, consisting of extracts of Verbena, Pink, Jessamine, West End, Lily of the Valley, Jockey Club, Jenny Lind, etc.

Moo-tcha, or Chinese Tooth Paste, Tooth Powders, and Cachori for the mouth.

A Large assortment of superior Shaving, Tooth, Hair and Flesh Brushes.

Have also on hand, a good assortment of Medicines, Drugs, Paints, Oils, Glass, Etc., to which they respectfully invite the attention of their customers and the public generally.

The business of Long and Long prospered during the era immediately preceding the War Between the States, and they expanded their interest to become the largest drug wholesale business in Northeast Georgia.

As the clouds of war unfurled, every available man was mustered into the service of the Confederacy. Crawford W. Long, then forty-five years old, remained on the home front, but was not idle. About the only record which can be found on Dr. Long's war service is that, on July 19, 1864, he enlisted as a private, at the age of forty-nine in General Taylor's Infantry. Apparently, he was never called to active duty and remained to serve the community until the close of the war. Long's service to his community did not go unnoticed. Following the war, in 1867, Surgeon General J. S. Billings of the United States Army appointed him surgeon of the Athens district, a position he held until the civil government was restored.

The people of the Confederacy and its Army were in dire need of drugs. Records are scarce; however, it is known that local pharmacists and physicians were responsible for preparing a list of drugs of native habitat which served as substitutes for the scarce therapeutic items. About a hundred yards from Long's home the remains of a drug garden may be found, the history of which is forgotten. Did Long, among his many other duties, through his drug store, supply at least Northeast Georgia with needed drugs grown locally? It is interesting to note that one of Long's associates in Athens, Dr. LeConte, was named to head a Confederate Laboratory which was established at Columbia, South Carolina. The duty of this Labo-

ratory was to manufacture ether and other pharmaceuticals as well as to extract and process crude drugs.

Long's interest in various activities was shown when Pharmacist R. M. Smith of Athens attended a convention in Augusta in May, 1863, for the purpose of formation of a Pharmacopoeia of the Confederacy. It is reported that Smith attended at the insistence of Dr. Long who was too occupied with his medical duties to leave the Athens community. Unfortunately, conditions in the Confederacy at this particular period were not in any way condusive to keeping records and to the functioning of the various committees so necessary to the preparation of a pharmacopoeia. Consequently, "Confederacy Pharmacopoeia" was never published. Francke (9), (10), (11) had made an interesting study of these trying times.

In the trying years of reconstruction, professional men in the prostrate South found it difficult to make financial ends meet. Although there was no scarcity of services to be rendered, the populace was unable to pay. During this time, however, the Long Brothers continued to expand their drug interest, although the drug business and the pharmaceutical profession was in, what may be described as, a "sad state of affairs". The reason for this poor condition may well be attributed to Confederacy's attitude toward the conscription of Pharmacists for military service. Realizing the need of pharmacists on the home front to serve the public and especially to supply substitute drugs for the new, non-existent, imported products, the Government had exempted pharmacists from military conscription. The military had called on the local pharmacists to search out native drugs. Unfortunately, for the profession of pharmacy, the existing licensing board for physicians and pharmacists in the state had not concerned themselves with enforcing the requirements for licensure for pharmacists. As a result, it was said that there were many good druggists in the state of Georgia, but only a few ever bothered to apply for a license. In this confused state of affairs a number of young men, desirous of dodging the draft, secured a mortar and pestle, a few apothecary jars and crude native drugs and called themselves "druggists". It wasn't until 1875, with the formation of the Georgia Pharmaceutical Association, that this situation began to clear.

From the advertisement quoted above it may be noted that the scientific mind of the discoverer of Ether for Anesthesia, although adverse to publicity on his own accomplishments, was in favor of

advertisement for items stocked by his drug store. It is with little surprise that we find that Joseph Jacobs, who took his Pharmacy apprenticeship under Dr. Long, gathered ideas concerning sale of merchandise which was to be a new innovation in the drug business. Jacobs soon found that Athens was too small for his dream and moved to Atlanta where he founded his now famous chain of drug stores. It is interesting to note that Jacobs, who was among the early members of the Georgia Pharmaceutical Association, ran into difficulty with the Association when he started the so-called "cut-rate" drug store and was expelled from the Association, later to be reinstated.

With competent pharmacists to handle the expanded activities of the drug store, Crawford W. Long did not find it necessary to devote much of his time to pharmaceutical activities; however, his interest never wavered in things pharmaceutical. Although he did not attend the organizational meetings of the Georgia Pharmaceutical Association, one can be assured that he offered every encouragement to those in his store, and perhaps Jacobs' interest was spurred on by Dr. Long. It is known that the firm sent its pharmacists over Northeast Georgia to collect crude drugs and processed these for distribution. No doubt other pharmaceuticals were marketed, and who is to say that, except for the adverse economic conditions of the South, Long and Long would have developed into one of the leading pharmaceutical houses in the nation. One of your medical service representatives may well have been detailing pharmaceutical products trade marked "Long and Long" or simply "L and L".

On June 16, 1878, Crawford W. Long suffered a cerebral hemorrhage while in the performance of his medical duties. With his passing, memoranda, records, and his innermost thoughts were never published and most were lost to mankind.

On September 15 of this year the Crawford W. Long Museum, in the old building where the discovery was made, was dedicated in Jefferson, Georgia. This museum is thought to be the only one of its kind devoted to a single medical discovery. The State of Georgia and the people of Jefferson cordially invite each and every one to visit this outstanding museum.

Had Long lived in a different era, or had not his discovery been the subject of such profound controversy, we may know more of the great man that he was. With records incomplete, we can only mix facts with fantasy and come up with a plausible story of why he was

the one to discover ether for anesthesia. This one fact we do know, he was not only a physician, but a "Pharmacist Extraordinary". His knowledge of the drug store and his acquaintance with things pharmaceutical, coupled with a brilliant mind, led to the greatest benefit that ever befell mankind.

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A METHOD FOR THE CONTROL OF DRUG SAMPLES

By Louis P. Jeffrey *

IN a recent issue of the *Journal of the American Medical Association* (1), there appeared an article concerning the danger of discarded drug samples. It was reported that physicians' children have become ill from swallowing drug samples sent to their doctor-fathers. The busy physician too frequently does not realize the potential danger of leaving such samples on the desk, in a desk drawer, or throwing them into a waste basket where they are easily accessible to children.

The Federal Drug Administration recently discovered another misuse of these sample drugs. A charwoman in a medical building was collecting samples from physicians' waste baskets and selling them to an individual who was then reselling them without a prescription. This public health problem concerns the pharmacist. I believe that it is his professional obligation to discuss this tactfully with the physicians in his area, because they are probably completely unaware of the hazards they are creating.

One pharmacist visited several physicians, discussed the problem with them, and left a container in the physician's office into which the discarded samples could be placed. At given intervals, the containers were collected and the drugs distributed to a local charity hospital to be dispensed in a proper manner. This system protects physicians and their families and disposes of the drugs by a method that will prevent any unethical sale or use of these drugs. Although this may not be an ideal solution, it is at least a step toward proper control of sample drugs.

Both of the mentioned problems deal with the physician either in his office or in a medical building. With many physicians' offices now being located in hospitals, could this not be a serious problem in a hospital as well as in a medical building? I am not proposing an

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over-all answer to the problem, but I should like to present to you a method which was instituted at our hospital and which has been effectively operated during the past two years.

First of all, I should like to quote an administrative policy which exists at our hospital.

> "It is contrary to hospital rules for drug company detail men to leave samples of new drugs anywhere except in the Hospital Pharmacy. No drugs may be given to the patients in the clinics unless they have been approved by the Pharmacy Committee for inclusion into the Hospital Formulary. This applies regardless of whether or not products may be obtained free.
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> "Samples of non-approved drugs may not be accepted or used in the care of service patients or used in the hospital in care of service patients. The only exception to this is when a research project is being carried out with the approval of the Research Committee, and the drug is being supplied free by the manufacturer.
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> "Samples or non-approved drugs or similar drugs may not be stored in any of the clinics or on any of the nursing floors in the hospital."

The initial step in solving the problem of drug samples was the establishment of a definite hospital policy with respect to such samples. With this policy as a guide, we proceeded to establish a system whereby drug samples would be stored, handled, and dispensed through the Pharmacy without inconveniencing the physician, the nurse, the patient, or the pharmacist.

Procedure

The procedure we used is as follows:

The physician in the clinic sees the patient, decides whether he or she will require medication and then proceeds to write a prescription. If for some reason the patient cannot pay for the medication—such as a service or welfare patient who has not as yet received approval from proper authorities; or, a person who would not qualify as a welfare case due to financial reasons but still could not afford to pay for drug medication; or, a patient who is reluctant to being placed on welfare

because of social standing—then the clinic sample list is checked. If the physician prescribes a drug on this list, he stamps the prescription *S. A.* which indicates drug supplies will be drawn from sample stock. The patient then brings the prescription to the Pharmacy. A pharmacist dispenses the medication free-of-charge observing the usual out-patient dispensing precautions.

The clinic sample list which is available in each clinic is a compilation of drugs which have been supplied to the hospital "gratis." Only those products in the Formulary are included in this list. The list is revised by the Pharmacy Department regularly with additions and deletions depending upon need, requests and manufacturer's compliance with supplying a particular product. When the stock supply of a sample drug is low or exhausted, the Pharmacy Department notifies the manufacturer's representative by letter.

There are several advantages to the patient in having all his medication—including drug samples—dispensed from the Pharmacy.

1. The Pharmacy is the natural outlet for the dispensing of *all* drugs to patients.
2. The medication is properly labelled whereas if the drug is dispensed in the clinic usually no directions will be borne on the container.
3. It prevents the patient from knowing and inquiring about what medication he is taking.
4. The prescription serves as a safety measure for the physician with the pharmacist acting as a drug consultant.
5. This system does not encourage the dispensing of drugs by physicians which is one of today's major current intra-professional problems.

Distribution of Drug Material

The availability of a single department that may be used as a center for the distribution of samples, literature and other material is an asset to the manufacturer. For instance, at the present time, we distribute through the hospital pharmacy several pharmaceutical house organ periodicals, various books, physicians gift boxes, and many other items. The establishment of a definite channel distribu-

tion that may be used as a headquarters for drug products has the following advantages:

1. The hospital maintains a systematic and orderly program for the distribution of sample drug items.
2. It presents to the manufacturer a place to go with his questions, material and samples, so that they may be distributed properly.
3. The medical center may exercise proper control over the use of samples by seeing that they do not fall into the hands of unauthorized personnel.
4. The patient, hospital and physician are protected by the proper screening action of the Pharmacy Committee.
5. The Pharmacy Department is established as the proper information center concerning all new drugs, including samples.
6. The establishment of a definite drug exhibit arrangement is made possible through this program.

Routine Check on Nursing Stations and Clinics

The adoption of a procedure for routine checking of nursing stations and clinics has enabled the Pharmacy Department to enforce the hospital's policies effectively with regard to samples. Primarily, an inspection of the nursing station is made to check routine drugs, floor stock, and narcotics. Since the establishment of definite policies with respect to drug samples, we now use this routine check-up method as a means of keeping a check on drug samples.

Once a month, a member of the Pharmacy Department makes rounds with a member of Nursing Service to inspect the drug cabinets on the wards. If in checking these cabinets, sample material is discovered which does not belong on the floor, the drug is removed from the unit. If this material has been left by a manufacturer's representative without proper hospital authorization, we proceed to discuss this situation with the salesman. He is cautioned against the violation of hospital policies and requested that, in the future, clearance be made through the Pharmacy Department.

In most hospitals today, nursing station cabinets are stocked with a great number of medications and the addition of new or

different drugs to this cabinet adds to the problem of storage, oftentimes resulting in confusion among the staff. We have found that Nursing Service is very willing to cooperate in the control of drug samples on nursing stations and in the clinics. This has been beneficial to both departments.

Hospital Formulary

The use of a Formulary as a guide, reference book, or policy book with respect to drugs in hospitals is familiar to all of you. At our hospital, this publication of the Pharmacy Committee is used to control the type and form of medication that is dispensed to service or welfare patient; and, also serves as a screening program in the use of new drugs. First, it protects the service patient, who is a hospital responsibility, from relatively new and unproven drugs. Secondly, it prevents the duplication of more than one generically titled product to be available to this patient.

If the physician prescribes for a clinic, welfare or service patient a drug which is not approved by the Pharmacy Committee of the Staff, that medication is not made available to that patient unless special temporary approval is obtained from the Medical Director or Chairman of the Pharmacy Committee. As stated previously, this policy applies regardless of whether or not the product may be obtained free of charge. If the medication prescribed by the physician is in the Formulary and sample material is available, then the prescription may be filled by the Pharmacy Department from this sample supply.

Drug Exhibit

Drug exhibits are considered an asset by the hospital and the manufacturer, but to offer the most to each of the participating members these drug exhibits must be conducted under definite policies with respect to location, products, hours, day of the week, and representatives present.

In our particular geographic area, we have an organization composed of medical service representatives. The group, the Medical Service Representative Society of the Capital District, cooperates with the hospital in arranging, conducting and supervising hospital displays. This cooperation between the organization and the Hospital has formed the basis upon which a definite schedule was established for routine drug exhibits.

Drug exhibits are conducted once a month on a definite day of the week at the same time each month. On this particular day, four pharmaceutical companies simultaneously, display drug products all day long. Each representative is given a large and relatively private area where he may detail or discuss his products with the physician. At these exhibits a representative may display trade or sample packages, but they may not distribute any samples to those attending the exhibit. This is a literature display only, since this is all that the representative is allowed to pass out.

If the medical service representative wishes to give a physician a sample of the products exhibited or any other product, he must abide by the following established policies:

1. If the sample to be dispensed is for personal use only, as much as is actually needed may be given to the physician but it is recommended that this be cleared through the Pharmacy Department.
2. If the drug is to be used in the hospital, it must be cleared by the Pharmacy and Therapeutics Committee.
3. If the material is mailed to the Physician, it is requested that this be mailed to his home address since it is usually for his personal use.
4. At the end of a display day, each representative makes a report of the samples requested. At a later time with proper permission, the samples are distributed.
5. Under no circumstances are the samples to be left any place in the hospital other than at the Pharmacy.

The successful functioning of most systems depends upon the proper, honest and intelligent supervision of the system. This is also true with respect to a drug samples control program. At the present time, we average two to three "*S. A.* Prescriptioins" a day. We have found that the privilege of controlling samples is not abused by anyone —the medical staff, the nursing department or the pharmacy department—at our hospital.

The distribution of samples to be dispensed on the prescription of a clinic patient has in no way decreased the routine prescription business of the Out-Patient Department. On the contrary since the rigid control on sample drugs has been enforced, the number of prescrip-

tions filled on an out-patient basis has tripled. The reason for this is because samples that were once stored in the clinics were distributed to all patients as medication free-of-charge. No prescription was ever written, specific directions in writing was seldom given to the patient and no permanent file was kept on the medication dispensed. Also, this method developed early in his experience as a resident or intern, the practice of dispensing medication at the time of the patient's visit. All of these disadvantages of drug dispensing, have been corrected. Therefore, instead of dispensing samples, the physician writes out a prescription and the patient having it filled at the Pharmacy, pays for the medication, thus, the ultimate increase in out-patient prescription filling.

Conclusion

What does the physician think of this program? Generally speaking, he endorses it and gives his full co-operation to the Pharmacy Department, since it is designed to benefit the patient—the prime objective of any health team. Even attending physicians bring drug samples to the Pharmacy to be stocked under this sample control program. This enables them to clean their offices and yet, not have to destroy the material; or, have it resolve itself into a previously mentioned situation where drug samples are not being handled properly.

The institution of this sample distribution program is not meant to put a check on the manufacturer, the representative, or any hospital staff member. It is developed to establish a definite system which is necessary in a medical center where many students are involved in its over-all function and where many new drugs are continuously being introduced, experimentally and otherwise. We have received excellent cooperation from the manufacturer and their representatives. They have discovered that in many instances this has been beneficial to the increased sale of their products.

Today, pharmaceutical manufacturers are seeking ways in which they may decrease their sample cost per salesman. At the present time, it is reported to range from $3,000 to $10,000 per year, with an average of $5,000 per year for each man. One company is now experimentally discontinuing samples to their field man for six months. Many have stopped sample distribution at national conventions. Others are issuing samples to physicians only from the company on a direct basis.

Summary

In conclusion, I should like to say, that samples of drug products can be a problem if they are handled carelessly, used indiscriminately, or not distributed properly. I am sure that the ethical pharmaceutical manufacturer intends that the distribution of his samples be done properly and in such a manner as to be beneficial to the patient, the physician, the hospital and to the manufacturer himself.

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A CHAPTER IN THE HISTORY OF PHARMACOGNOSY, SIXTEENTH CENTURY ITALY *

By J. Hampton Hoch **

THERE were converging forces and circumstances of Renaissance time which led to the teaching of pharmacognosy, to the establishment of plant gardens, and which made Italy the center for studies in natural sciences. The late fifteenth and the first half of the sixteenth century marked a new era for what we now call pharmacognosy, although this word had not yet been coined and our present day concepts of this science were, of course, non-existent at that time.

The Renaissance in the arts and sciences was led by Italian scholarship and antiquarian research. At first, thinkers began to question the authority of dogma; then they came to accept the authority of the "ancients," which really involved substituting earlier authority for later. Finally, they appealed to Nature against both ecclesiastical and classical authority. The recovery of old Greek and Latin works in their original form, not as corrupted by copyists and Arabian translators, resulted in strengthening "ancient" authority at first. But this recovery of classical culture also led to an awareness of the freedom of inquiry and criticism which the "ancients" enjoyed. Thus the humanistic movement became the well-spring of free and fruitful criticism and of objective and impartial evaluation.

Science, however, lagged behind the humanities in this return to the classics; although in the area of natural science and medicine there was a rebirth of the love of Nature, and a flowering of anatomical and clinical observations.

The rise of printing after the mid-fifteenth century advanced man's ability to communicate, but the incunabula of science did not diffuse objective and rational knowledge as much as they spread superstitutions.

For centuries various Italian city-states had controlled Mediterranean commerce. From the twelfth to the fifteenth century Pisa, Genoa, Florence, and Venice in turn had dominated the commercial

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ties of Orient to Occident. Establishment of a sea route to the East Indies changed this picture, simultaneously increasing and deepening knowledge of drugs. Then with the discovery of America a whole new world of drugs was available to enrich the materia medica. The commercial star of Venice faded as Lisbon became the commercial center for the West.

The sixteenth century was not a calm period. Challenge and change were in the air; many things were in ferment. Religious protestants challenged papal authority. Luther nailed more than theses to the church door in Wittenberg. The political situation in Italy was far from stable. Hapsburg arms clashed against Valois power in northern Italy where the more important universities were located. Conquests in far distant America poured more gold into Spanish coffers than Genoa or Venice had ever received from their profitable trade with the East. And Spanish gold was a potent force in the selection of the Hapsburg Charles as Holy Roman Emperor, rather than Valois Francis. For half a century hapless north Italy saw Gallic and Spanish troops marching and counter-marching as flare-ups between Charles V and the French continued.

In this sixteenth century era whoever ventured to contradict the authority of the "ancients", the original, pure well-springs of all that was considered good, was just as savagely attacked as one who previously had the temerity to question the logic of the schoolmen. Important work in the sciences was often ignored and some was not printed until years after the author's death.

Since pharmacognosy had its origin in materia medica it is pertinent to review the status of materia medica at the beginning of the sixteenth century.

One of the medical leaders of this time was Nicolo da Loniga (1428-1524), commonly called Leonicenus, who graduated from and then taught at the University of Padua before moving on to Bologna and Ferrara. This man who is considered the best critic and greatest clinician of his day taught that certain remedies do not act on humors but act directly on the body or on disease. Here is a new idea, of specifics, which Paracelsus who was one of Loniga's students developed so enthusiastically in one direction.

The humanists, like Hermolaus Barbarus (1454-1493) who also was a Padua graduate, had worked to purify the texts of Pliny, Dioscorides, and other ancients who had written about drugs. How-

ever, the popular printed works prepared for the laity as a guide to the curative virtues of the materia medica perpetuated wild fancies and superstitions, practices of earlier times. Nearly all of the numerous herbals issued up to 1500 were translations or compilations from medieval days. Crude woodcuts of stylized and often distorted sketches of plants illustrated many of them. These incunabula sometimes supplied classical and vernacular names of the materia medica too. Dioscorides, who had died nearly fifteen hundred years before, was still considered the supreme authority on drugs and his "De materia medica" as a court of last resort.[1]

Increments to botanical and pharmacological knowledge during the sixteenth century served to promote the rise of all the natural sciences. No small part in this accretion resulted from the travels of savants, incited by an impulse toward investigation, discovery and travel. The herbals of this century embraced not only botany and pharmacognosy but included pharmacodynamics and therapeutics, as well as some pharmacy.

Knowledge of drug collection and preservation had advanced very little since Dioscorides' time. Preparations had multiplied greatly and pharmacy had evolved in Italy as a separate profession with special skills and responsibilities. Polypharmacal monstrosities such a treacle and viper troches had attained great reputation, and the Venetian product was deemed the *ne plus ultra*. Powerful guilds exercised regulatory functions and controlled the professions. Treatises which served as textbooks or even as official guides for the apothecary were supplanted by authoritative pharmacopoeias in Florence (1498) and later on in other Italian cities.

The 16th century was the period of the great herbals, those encyclopedias of popular medicine which described not only vegetable but animal and mineral drugs as well. The medical philologists produced "pure" translations of Galen and Dioscorides and numerous elucidations and commentaries on the materia medica of the ancient authorities appeared at short intervals thereafter.

Many foreign students at the Italian universities carried their masters' teachings back to their homelands and disseminated these ideas to their own students and recorded them in published works. Although not all of the worthwhile and progressive improvements in 16th century expansion of knowledge of medicinal plants can be

1. The first Latin edition of this work was issued in 1478; the first Greek edition appeared at Venice in 1499.

traced back to Italy, many of the outstanding leaders in this field were Italians or had connections with or were influenced by the Italian masters.

A galaxy of names which establishes this point includes, in addition to those mentioned in the following paragraphs: Euricius Cordus, Johann Agricola, Brasavola, Turner, Mattioli, Amatus Lusitanus, Wieland, Maranta, Durante, Camerarius, Tabernaemontanus, Prosper Alpino, and F. Columna.

The various chairs of medicine in Italian faculties included teaching of materia medica which was mostly a theoretical presentation referred to as "reading Dioscorides." The first transformation in this situation occurred at the University of Padua where Francisco Buonafede (1475-1558), in 1533, inaugurated one of several changes. His view was that the usual discourses and comments on Dioscorides and the text critiques were not fruitful; lectures on the simples should be supplemented by demonstrations of the living plants. The Venetian Senate came to approve this division of the course, and at his urging, decreed (1545) a garden for medicinal plants at the University. It is said that Buonafede had a garden of simples as early as 1533; instruction of students in the garden began in 1540. Another step he took was the formation of a drug collection, a "spezieria," so that the dried crude drugs as well as the living plants could be demonstrated by his colleague, the "ostensio simplicium."

Pharmacognosy as a branch of academic study first sprouted at Padua and grew to become one of the disciplines of natural science. The humanist emphasis on a return to nature and stress on the spirit of observation also led to the establishment of botany as a scientific discipline and was important in preparing the ground for a general renaissance in science.

Bologna, Pisa and other Italian universities soon followed Padua's lead and adopted the newer ideas. At Bologna Luca Ghini (1490?-1556) was teaching "de simplicibus" from 1534 to 1543. He initiated the art of preparing and mounting dried plants as herbarium sheets and books of specimen plants were gathered together by various persons he had instructed. Probably the earliest such collection was that begun by Cibo at Rome in 1532. A. Caesalpino and U. Aldrovandi who subsequently taught botany and pharmacognosy at Bologna also had herbarium collections of dried plants which they presumably used in their courses. When he moved on to teach pharmacognosy

at the University of Pisa in 1543 Ghini started a medicinal plant garden there to aid in student instruction. And in 1545 Duke Cosimo I ordered him to establish "a garden of simples" in Florence.

Apparently Ghini did not publish any treatises or commentaries. His correspondence and the references made by his students supply our information about this teacher. He had projected a botanical work of wide scope but allowed his material to be incorporated in the commentary on Dioscorides with which his friend Mattioli established a gigantic reputation.

Luigi Squalermo (1500?-1570), commonly called Anguillara, was the first herbalist and collector of plants for Ghini at Pisa in 1543. He removed to Padua after three years and took over the direction of the medicinal plant garden (1546-1561) and after a few years succeeded Buonafede in the pharmacognosy post also. When he resigned in 1561 Melchior Wieland (Guilandino) (1520-589) took charge of the garden and instruction in pharmacognosy at Padua. Anguillara's book on simples written in Italian and issued by M. G. Marinello in 1561 had a high reputation. Caspar Bauhin published a Latin translation of it at Basel in 1593.

Ulysses Aldrovandi (1522-1605) along with Andrea Caesalpino (1524-1603) had been a student at Padua under Anguillara. Both men subsequently came to Bologna as teachers and Aldrovandi established the garden at this university in 1567 and directed it until his death in 1605. His herbarium collection which he continued to augment during fifty years was part of the natural history museum he founded at Bologna. Both as a teacher, author and correspondent he advanced the progress of science, particularly zoology.

A point of significance should be inserted, namely, that Leonhard Fuchs (1501-1566) the author of the monumental "De historia stirpium" and famous teacher for thirty-one years at Tübingen University in Germany is generally credited with instituting summertime field collection of plants by his students. Furthermore, this botanical leader of his time formulated the descriptive pattern which later botanists followed: presenting first, the Greek, Latin and vernacular names; second, the form and characters of the plant; third, the locality; and fourth, the time of blossoming.

The preparation of better herbals was one of the chief botanical accomplishments of the sixteenth century. Despite their utilitarian object and concern with the medicinal properties of plants, the herbals

present the beginnings of descriptive morphology. A pioneer of phytography who had been guided by both Ghini and Buonafede was the accomplished German youth, Valerius Cordus (1515-1544). His herbal, published posthumously by Conrad Gesner in 1561, presented accurate and systematic descriptions, gave details of types of plants, and began notations of plant anatomy, e.g., number of chambers in the ovary, placentation, etc. Furthermore, toward the end of the century we find the beginnings of plant taxonomy. Andrea Caesalpino, the prominent teacher at Bologna, in "De plantis" (1583), published some concise statements of botanical theory. His seeking after a non-utilitarian system of plant classification led him to selection of the fruit and seed as the main basis for classification.

Northern Italy is of peculiar importance in the history of modern science. And the University of Padua under the powerful protection of Venice has an extraordinary record. Padua enjoyed an international reputation unequalled by any other university. Here international currents met, mingled and flowed forth again, to diffuse botanical and medical culture over all of Europe. Truly the center of the scientific renaissance, its medical school came to surpass that of Bologna. And here pharmacognosy first became an acknowledged academic discipline.

Padua's students went out to fertilize other Italian schools—and over the Alps to Wittenberg, Nuremberg, Basel—so that from Buonafede, Anguillara and Wieland there stemmed a many-branched stream of pioneers in pharmacognosy.

The stimulation of new explorations, the modification of therapy and introduction of new ideas of materia medica, the establishment of numerous medicinal plant gardens, the rise of pharmacopoeias and standardized medicines, the growth of drug collections and herbaria, are facets of an interesting chapter in the history of pharmacognosy. We have merely flipped through the pages in this synopsis.

SELECTED ABSTRACT

The Treatment of Acute Respiratory Infections with Chloramphenicol. Ioannidis, A. H., and Murdoch, J. McC. *Brit. Med. J.* No. 5028:1157 (1957). A series of 80 patients with acute respiratory infection of mixed bacterial origin or an infection complicating other conditions were treated with 500 mg. chloramphenicol every 6 hours until 10 Gm. had been given (5 days). Thirty-six of these patients had had previous unsuccessful treatment with other antibiotics. Pretreatment sputum cultures showed a mixed infection with *Hemophilus influenzae* predominant in 15, *Staphylococcus pyogenes* predominant in 19, and a pneumococcus predominant in 24. Of the *S. pyogenes* strains, all were found sensitive to chloramphenicol by routine laboratory tests. Many were resistant to penicillin, streptomycin and the tetracyclines.

Clinical improvement was obtained in 77 of the patients. Of these, 73 remained free from symptoms for periods ranging from 1 to 8 months of observation. Three patients relapsed within 1 week after stopping treatment and one continued to have sputum although he was subjectively improved. Three patients did not respond favorably to the treatment.

Side effects were minimal. Seventy-five patients were completely free from any side effects attributable to the antibiotic. Dry mouth was reported by 3 patients, mild diarrhea by one, and a mild skin rash developed in one patient. No evidence of bone marrow depression was noted in any patient.

The authors concluded that chloramphenicol has a definite place in the short-term treatment of acute respiratory infections by mixed bacterial populations. They felt that the potential toxicity of chloramphenicol has been overstressed. However, they felt that chloramphenicol should be limited to the treatment of acute infections and should not be used for prolonged therapy nor for the treatment of trivial infections.

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